DOCUMENT RESUME

ED 471 742 HE 035 576

AUTHOR	Choy, Susan P.
TITLE	Access & Persistence: Findings from 10 Years of Longitudinal Research on Students. Informed Practice: Syntheses of Higher Education Research for Campus Leaders.
INSTITUTION	American Council on Education, Washington, DC. Center for Policy Analysis.
PUB DATE	2002-00-00
NOTE	43p.; For an ERIC Digest based on this report, see ED 466 105.
AVAILABLE FROM	ACE Fulfillment Service, Department 191, Washington, DC 20055-0191 (Item no. 309375: $15 plus $6.95 shipping and handling). Tel: 301-632-6757; Fax: 301-843-0159. For full text: http://www.acenet.edu/bookstore.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS
DESCRIPTORS	Access to Education; *College Bound Students; *Diversity (Student); Elementary Secondary Education; Higher Education; *Longitudinal Studies; National Surveys; *Student Characteristics
IDENTIFIERS	Baccalaureate and Beyond Longitudinal Study (NCES); Beginning Postsecondary Students Long Study; National Education Longitudinal Study 1988

ABSTRACT

To answer questions about who goes to college, who persists toward a degree or credential, and what happens to students after they enroll, the National Center for Education Statistics conducted three national longitudinal studies to track students' through the postsecondary education system. These three surveys, the National Education Longitudinal Study, the Beginning Postsecondary Student Longitudinal Study, and the Baccalaureate and Beyond Study, provide findings about college access, student characteristics, and academic persistence. These findings show that today's college students are a diverse group. Thirty percent are minorities, 20% were born outside the United States or have a foreign-born parent, and 11% spoke a language other than English while they were growing up. Only 40% of today's college students fit the traditional mold of enrolling immediately after graduation, depending on their parents for financial support, and working only part time or not at all. About three-quarters of all college students now earn a paycheck. Findings about access show that a young person's likelihood of attending a four-year college increases with the level of their parents' education. However, taking challenging mathematics courses can mitigate the effect of parents' education on college enrollment. More at-risk students apply to college if their friends plan to go. The price of attending college, however, is still a significant obstacle for students from low- and middle-income families. The report identifies a number of risk factors that jeopardize students' staying in school once enrolled. Most students who leave college enroll again within 6 years, but they often enroll at a different institution. (Contains 16 figures and 29 references.) (SLD)

INFORMED PRACTICE:
Syntheses of Higher Education Research for Campus Leaders

ED 471 742

Access Persistence:

Findings from 10 Years of Longitudinal Research on Students

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY
W. Bresser
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
2A

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

American Council on Education
Center for Policy Analysis

BEST COPY AVAILABLE

INFORMED PRACTICE:
Syntheses of Higher Education Research for Campus Leaders

Access & Persistence:

Findings from 10 Years of Longitudinal Research on Students

By Susan P. Choy

American Council on Education
Center for Policy Analysis

BEST COPY AVAILABLE

Copyright © 2002

American Council on Education
One Dupont Circle NW
Washington, DC 20036

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

Additional copies of this publication are available by sending a check or money order for $15 per copy, plus $6.95 shipping and handling (for orders of more than one copy, call the number below), to the following address:

ACE Fulfillment Service
Department 191
Washington, DC 20055-0191
Phone: (301) 632-6757
Fax: (301) 843-0159

When ordering, please specify Item #309375.

A free electronic version of this report is available through www.acenet.edu/bookstore.

Table of Contents

Foreword 3

Executive Summary 5

Introduction 7

College Students Today 9

Access to College 11

Staying in School Once Enrolled 19

The Importance of the First Year 25

Time to Degree 27

Life After College 29

Conclusion 33

Questions for Institutional Research 35

Key Studies: An Annotated Bibligraphy 37

Bibliography 39

About the Author 45

BEST COPY AVAILABLE

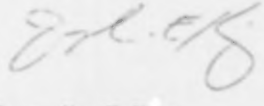
Foreword

In May 2001, the American Council on Education, with generous support from the William and Flora Hewlett Foundation, convened a meeting to assess the current state of analysis of higher education policy issues. The purpose of the meeting was to identify ways in which the needs of institutions, the interests of foundations, and the talents of scholars can be better aligned. Participants included higher education scholars, foundation executives, college and university presidents, and education policy analysts.

In particular, we were eager to learn how ACE could make the research on higher education more accessible and useful to institutional leaders. Several participants suggested that ACE produce a series of publications, each summarizing the findings of an important branch of higher education research. We have embraced that suggestion and hope to produce two such essays per year under the series title *Informed Practice: Syntheses of Higher Education Research for Campus Leaders.*

Access and Persistence: Findings from 10 Years of Longitudinal Research on Students is the inaugural publication in this series. It summarizes what researchers have learned about access, persistence, and outcomes from 10 years of federally funded national longitudinal studies of college students. We hope you will share it with your staff and that it will spark ideas for research and programmatic efforts on your campus. Additional copies are available for purchase from ACE or may be downloaded at no cost from the ACE web site.

We welcome your suggestions for areas of research that future essays should address and for ways that we can make these documents more useful.



Jacqueline E. King
Director, Center for Policy Analysis

BEST COPY AVAILABLE

Executive Summary

What do we really know about who's going to college? Who persists on the path toward a degree or credential? What happens to students after they enroll? Research based on three federally sponsored national longitudinal surveys of students provides answers to these key questions. Among the most important findings:

College Students Today

- Today's college students are a diverse group: 30 percent are minorities, 20 percent were born outside the United States or have a foreign-born parent, and 11 percent spoke a language other than English while growing up.
- Traditionally, four-year college students have enrolled full time immediately after graduating from high school; depended on their parents to take care of most, if not all, financial responsibilities; and worked part time or not at all. Today, only 40 percent of four-year college students fit this traditional mold.
- About three-quarters of all four-year college students now earn a paycheck, and about one-quarter of them work full time.

Access to College

- A young person's likelihood of attending a four-year college increases with the level of their parents' education. This is true even for the most highly qualified high school seniors.
- Taking challenging mathematics courses can mitigate the effect of parents' education on college enrollment. The association between taking a rigorous high school math curriculum and going to college is strong for all students, but especially so for those whose parents did not go beyond high school.
- More at-risk students apply to college if their friends plan to go. College outreach programs, as well as parental and school support with the application process, also have proven worthwhile.
- The price of attending college is still a significant obstacle for students from low- and middle-income families, but financial aid is an equalizer, to some degree. Low-income students enroll at the same rate as middle-income students if they take all the necessary steps toward enrollment.

BEST COPY AVAILABLE

Staying in School Once Enrolled

- Even if students leave the first college in which they enrolled, they do not necessarily drop out of the postsecondary system; they often transfer to another school. Therefore, the dropout and completion records of individual institutions understate overall postsecondary persistence.
- Students can increase their likelihood of succeeding in college by enrolling in a rigorous high school program and limiting the number of hours they work while in college.
- Risk factors that make it more difficult for students to complete college include working full time, starting at a community college, and having parents who did not attend college.

The Importance of the First Year

- Most students who leave college during or after their first year return sometime during the next six years. More often, though, they enroll in a different institution, rather than returning to their first one.

Time to Degree

- Sixty-four percent of students who earned their bachelor's degree in 1992–93 had finished within five years, meaning that just over one-third had taken more than five years to earn their degree.

Life After College

- About one-third of those who earn a bachelor's degree enroll in a graduate program within four years. Men and women enroll at the same rates but tend to select different programs. Women are less likely than men to choose MBA, professional, and doctoral programs, and are more likely to choose master's programs other than an MBA.
- Although students whose parents did not go to college are at a disadvantage with respect to college access and persistence, if they do finish a bachelor's degree, their employment outcomes are similar to those of their peers with college-educated parents.
- Just over one-third of all graduates were repaying student loans four years after they finished college. The payments, averaging about $150 per month, were not burdensome for most when compared with their incomes, although these data pre-date recent large increases in borrowing.

BEST COPY AVAILABLE

Introduction

What do we really know about who's going to college, who persists on the path toward a degree or credential, and what happens to students after they enroll? Colleges keep data on their students, of course, but these data can tell only discrete parts of the story. To help paint a national picture, the U.S. Department of Education's National Center for Education Statistics (NCES) launched a series of longitudinal studies more than a decade ago to track students' movements into and through the postsecondary education system.

This report summarizes key findings of research conducted using these surveys (highlighted in the box). Detailed descriptions of the surveys and the full text of all NCES-sponsored studies can be downloaded from the NCES web site at http://nces.ed.gov. A complete reference list, as well as an annotated bibliography on some of the most important studies, is included at the end of this report.

The Studies

- **The National Education Longitudinal Study (NELS)** started with a cohort of 1988 eighth graders and resurveyed the same students as high school sophomores and again as high school seniors. The students were surveyed again in 1994 and 2000 (two and eight years after most of them had graduated from high school). The findings from this NELS survey reveal valuable information on the relationships among students' backgrounds, junior high and high school experiences, and access to postsecondary education.
- **The Beginning Postsecondary Student (BPS) Longitudinal Study** has followed two cohorts of beginning postsecondary students (1989–90 and 1995–96) for six and three years, respectively. NCES researchers interviewed the latter cohort again in 2001. Unlike NELS, which is limited to a specific age cohort, BPS includes students who delayed entry as well as those who went directly to college after high school. The students in BPS are a subset of those included in the larger National Postsecondary Student Aid Study (NPSAS), a periodic cross-sectional study of all postsecondary students.
- **The Baccalaureate and Beyond (B&B) Study** interviewed 1992–93 bachelor's degree recipients during their final year in college, then resurveyed them one and four years later. This cohort will be interviewed again in 2003, 10 years after the students graduated. Similar to BPS, the B&B sample is a subset of the larger one developed for NPSAS.

BEST COPY AVAILABLE

The findings described in this report focus on undergraduates at four-year colleges and universities, although they also reference bachelor's degree seekers who start at community colleges. It is important to recognize, though, that students at four-year institutions accounted for slightly less than half of all undergraduates in 1999–2000 (47 percent).[1] Almost as many enrolled at community colleges (42 percent), with the rest enrolling at private technical schools or other types of less-than-four-year institutions. About three-quarters of those who began their postsecondary education at a community college in 1995–96 hoped to earn a bachelor's or advanced degree sometime in the future (Kojaku and Nuñez 1998).

This report begins with a brief profile of students at four-year institutions to set a context for the exploration of issues related to access and persistence.

[1] The source for all data describing undergraduates in 1999–2000 is U.S. Department of Education, National Center for Education Statistics, 1999–2000 National Postsecondary Student Aid Study, Undergraduate Data Analysis System.

College Students Today

Approximately 9 million students were enrolled at four-year colleges and universities in 1998 (U.S. Department of Education 2001b). That's 25 percent more than the number of students who were enrolled 20 years earlier. Not only are there more students swelling the college rolls, but the population also looks markedly different than a generation ago. Understanding these shifts is essential to appreciating the nuances of access and attainment.

Demographics

Gender. Men no longer dominate the postsecondary landscape as they once did. In 1999–2000, women made up 55 percent of undergraduates at four-year colleges and universities, and ever since the early 1980s, women have been earning more than half of all bachelor's degrees awarded annually (U.S. Department of Education 2000). While women still trail men in fields such as the physical sciences, computer science, and engineering, they are gradually closing those gaps as well.

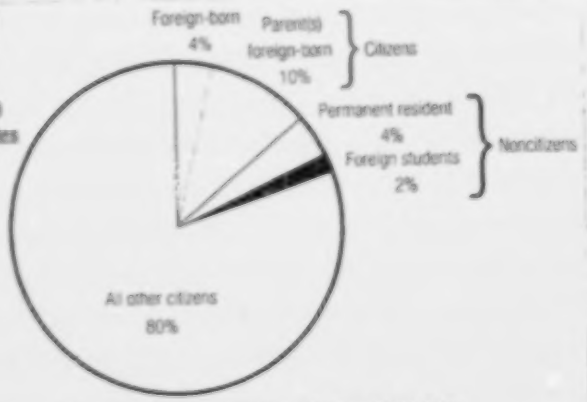
Race/ethnicity. Minorities, however, have not made the same strides. About 30 percent of undergraduates at four-year colleges and universities in 1999–2000 were minorities. While the proportion of minorities in four-year schools has been increasing steadily for many years and is up from 20 percent in 1989–90, (Horn and Khazzoom 1993), African Americans and Hispanics are underrepresented relative to the traditional college-age population as a whole. Among all 18- to 24-year-olds in 2000, 34 percent were minorities (14 percent African American, 15 percent Hispanic, 4 percent Asian/Pacific Islander, and 1 percent American Indian/Alaska Native) (U.S. Census Bureau 2000). Among four-year college students in this age group, 10 percent were African American and 10 percent were Hispanic in 1999–2000.

Cultural diversity. College students today come from diverse cultural backgrounds as well. Twenty percent of undergraduates at four-year institutions in 1999–2000 were either born outside the United States or had at least one foreign-born parent *(see Figure 1)*, and 11 percent spoke a language other than English at home.

THE GLOBAL CAMPUS— Today's college students are a diverse group: 30 percent are minorities, 20 percent were born outside the United States or have a foreign-born parent, and 11 percent spoke a language other than English while growing up.

Figure 1

Distribution of 1999–2000 Undergraduates at Four-year Colleges, by Citizenship



SOURCE: U.S. Department of Education, National Center for Education Statistics, NPSAS: 2000.

BEST COPY AVAILABLE

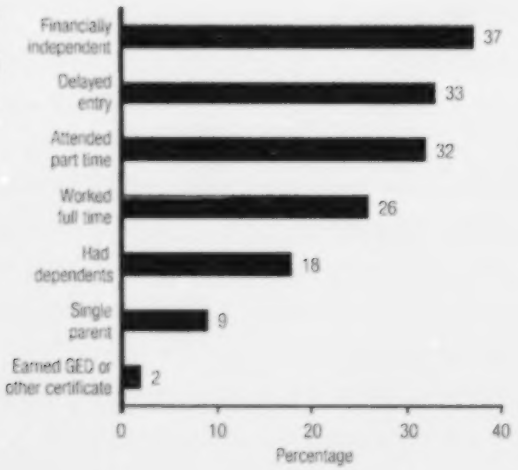
BREAKING THE MOLD—Traditionally, four-year college students have enrolled full time immediately after graduating from high school; depended on their parents to take care of most, if not all, financial responsibilities; and worked part time or not at all. Today, only 40 percent of four-year college students fit this traditional mold.

Nontraditional Students

The traditional four-year-college student is typically described as one who enrolls full time immediately after earning a regular high school diploma, relies on his or her parents to pay for college and related expenses, and either does not work or works part time. That type of college student is now in the minority (only 40 percent of students fit this description in 1999–2000). "Nontraditional" identifies a class of student with different attributes. These students may wait one or more years after high school before enrolling in college or they may attend part time. A few earn a high school equivalency credential such as the General Educational Development (GED) credential. Other nontraditional characteristics include responsibility for dependents, being a single parent, financial independence, and working full time. The competing outside responsibilities that nontraditional students face may interfere with their studies. *Figure 2* shows the percentage of students with each of these nontraditional characteristics. Overall, 60 percent of undergraduates at four-year colleges and universities demonstrated one or more of these characteristics.

Figure 2

Percentage of Undergraduates at Four-year Institutions with Nontraditional Characteristics: 1999–2000



SOURCE: U.S. Department of Education, National Center for Education Statistics, NPSAS: 2000.

DOUBLE DUTY—About three-quarters of all four-year college students now earn a paycheck, and about one-quarter of them work full time.

Combining School and Work

Students always have worked, whether full or part time, to help cover their educational expenses, but many in higher education may not recognize how many students are working while going to school or how much they are working. Devoting any more than about 15 hours per week to paid work tends to affect academic performance negatively and imposes limitations on students, such as restricting their choice of classes, limiting the number of classes they can take or when they can take them, and reducing library access (Horn and Berktold 1998). Such limitations may lessen students' desire to stay in school or slow their progress toward a degree.

Working during the school year is the norm. A substantial majority–77 percent–of all undergraduates at four-year institutions in 1999–2000 earned a paycheck, and 26 percent worked full time. Furthermore, 19 percent identified themselves as primarily employees enrolled in school rather than students working to meet expenses. In other words, for almost one out of five students at four-year colleges, being a student is a secondary activity. The 59 percent of undergraduates who worked but still considered themselves primarily students were clocking an average of 23 hours per week during the school year.

In sum, the young college student fresh out of high school concentrating full time on his or her studies is not typical. College students today cover a wide age range and come from diverse backgrounds. Many lead complex lives, juggling school, work, and family responsibilities as they pursue their degrees.

BEST COPY AVAILABLE

Access to College

High school graduates possess high educational expectations. Virtually all (more than 90 percent) of the members of the 1992 high school graduating class, regardless of race, family income, or parents' education, said they planned to continue their education *(see Table 1)*. However, family income and parents' education influence students' ability to follow through with those plans within two years of finishing high school. As parents' education and family income increase, high school graduates are more likely to plan to continue their education immediately after high school, are more likely to enroll within two years, and, if they planned to attend a four-year college immediately after high school, are more likely to do so.[1]

The Path to College

To make it to a four-year college, students must complete five steps, usually in this order:

- Aspire to college.
- Be academically prepared.
- Take the necessary entrance exams (such as the SAT or ACT).
- Apply to college.
- Enroll.

Students leave the path at each step along the way, but the greatest numbers are lost

Table 1

Percentage of 1992 High School Graduates with Postsecondary Plans and Their Enrollment Outcomes as of 1994

	Planned post-secondary education	Planned to enroll immediately	Enrolled by 1994	Planned to attend four-year immediately, enrollment by 1994		
				Four-year	Other	None
Total Percentage	**97**	**79**	**75**	**78**	**16**	**6**
Race/ethnicity						
Asian	98	84	86	81	15	4
Hispanic	97	76	71	65	23	11
African American	96	78	71	73	17	10
White	97	80	76	80	16	5
Family income						
Low (less than $25,000)	94	70	64	72	18	10
Middle ($25,000–$74,999)	97	82	79	77	18	5
High ($75,000 or more)	99	92	93	89	8	3
Parents' education						
High school or less	94	68	59	65	21	13
Some college	96	78	75	74	20	7
College graduate	99	91	93	87	10	3

SOURCE: Berkner and Chavez (1997), Tables 9 and 10. Based on NELS data.

[1] Although parents' education and family income are related, they have independent effects on college access (Berkner and Chavez 1997). Race ceases to be significant after controlling for income, parents' education, and academic preparation.

BEST COPY AVAILABLE

because they do not aspire to attend a four-year college or because they fail to prepare academically *(see Figure 3)*. The NELS data have provided valuable information on who gets on–and stays on–the path to college during high school and what keeps them moving forward.

One key variable is parents' education.[3] Students with a parent who finished college tend to report high educational expectations as early as eighth grade and are more likely to complete all the steps necessary for college enrollment than students whose parents did not attend college.[4]

The types of academic courses students take in high school also have proven to be a crucial factor in keeping students on the path to college. The data in Figure 3 show a considerable drop from the percentage of students who aspire to college to the percentage who prepare academically. Support in the application process, especially for at-risk students, helps students complete the steps that follow academic preparation.

Finally, students need adequate financial resources to complete the last step: enrollment. Families are expected to pay for their children's education to the extent that they are able, but a variety of student financial aid programs assist students who have additional financial needs.

The rest of this section explores factors that seem to help students stay on the path to college.

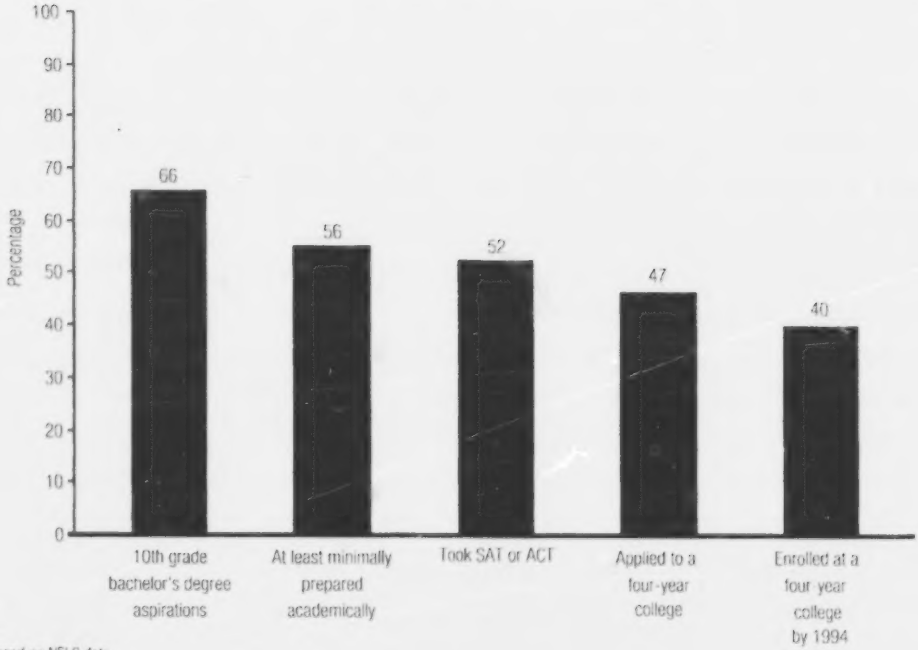
Parents with Some College Experience

One-third of all 1992 high school graduates had at least one parent with a bachelor's or advanced degree (Horn and Nuñez 2000).

Figure 3

Percentage of 1992 High School Graduates Who Took Each Step Toward College Enrollment by 1994

NOTE: 45 percent of the graduates enrolled in a four-year college, but only 40 percent are shown here because 5 percent did not report bachelor's degree aspirations in 10th grade or skipped one of the other steps.



SOURCE: Horn (1997), Table 6. Based on NELS data.

[3] The phrase "parents' education" means the highest level attained by either parent. The phrases "finished college" or "were college graduates" mean that the individual earned a bachelor's degree or higher.

[4] Among 1988 eighth graders, 91 percent of those with a parent who had at least a bachelor's degree expected to earn a bachelor's degree, compared with 55 percent of those whose parents did not go beyond high school (Berkner and Chavez 1997).

BEST COPY AVAILABLE

These students had a distinct advantage regarding postsecondary access. Within two years of finishing high school, 93 percent of these 1992 high school graduates enrolled in some type of postsecondary education, most frequently a four-year college *(see Figure 4)*. In contrast, only 59 percent of those whose parents did not go beyond high school enrolled in postsecondary education, and less than half of this 59 percent enrolled at a four-year college.

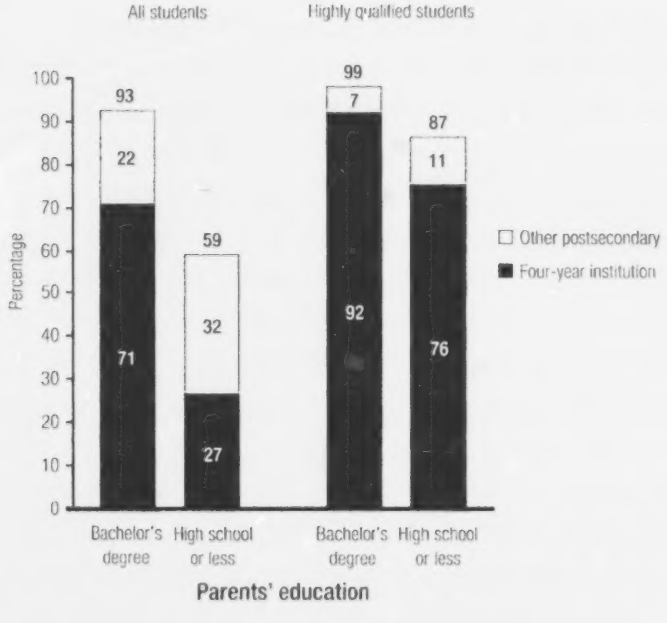
Obviously, this discrepancy in enrollment rates reflects not only parents' education but other related factors, such as income and academic preparation for college. However, the advantage of having college-educated parents continues even when we consider only those high school graduates who were the most highly qualified for college.[5] The postsecondary enrollment rate for those whose parents finished college was 99 percent (92 percent at a four-year college). For those well-prepared students whose parents had no college experience, the postsecondary enrollment rate was a much lower 87 percent (76 percent at a four-year college).[6]

When parents have a college degree, they are better able to guide their students along the path to college. Considering only students who were at least minimally qualified for college, those whose parent or parents have a bachelor's degree were more likely than those whose parents did not go beyond high school to discuss SAT or ACT preparation and college plans with their parents *(see Table 2, next page)*. Students at least minimally qualified for college also

FAMILY INFLUENCE—
A young person's likelihood of attending a four-year college increases with the level of his or her parents' education. This is true even for the most highly qualified high school seniors.

Figure 4

Percentage of 1992 High School Graduates Who Enrolled in Postsecondary Education by 1994, by Parents' Education



SOURCE: Horn and Nuñez (2000), Table 9. Based on NELS data.

[5] Highly qualified students fell into the top 10 percent of graduating seniors who went to a four-year college on at least one of five criteria. That is, they had at least one of the following: a grade point average (GPA) of 3.7, a class rank percentile of 96, a combined SAT score of 1250, a composite ACT score of 28, or were in the 97th percentile on the 12th grade aptitude tests administered as part of the NELS study. Berkner and Chavez (1997) describe in detail the construction of this college qualification index.

[6] The essay in *The Condition of Education 2001* (U.S. Department of Education 2001) describes the educational experiences of students whose parents did not go to college.

BEST COPY AVAILABLE

Table 2

Percentage of College-qualified 1992 High School Graduates Who Planned for College with Their Parents

	Parents' education		
	Total	Bachelor's degree or higher	High school or less
Students and parents often discussed:		Percentage	
SAT/ACT preparation (12th grade)	22	27	16
College plans frequently (12th grade)	51	61	42
Parents:			
Attended program on educational opportunities	42	51	29
Visited a college with their child	74	82	61
Sought financial aid information	81	83	72

SOURCE: Horn and Nuñez (2000), Tables 14–17. Based on NELS data.

were more likely to have parents who attended programs on educational opportunities for their children, accompanied their child on a school visit to decide about application or enrollment, or sought financial aid information.

College-educated parents also tend to be more active participants in important curricular decisions. This is true even when researchers controlled for ability. For example, among students who scored at the highest level of mathematics proficiency in the eighth grade, those whose parents finished college were more likely to report that their parents encouraged them to take algebra that year and helped choose their high school program (Horn and Nuñez 2000). Similarly, among the most academically advanced high school seniors (completing algebra II or higher), those whose parents were college graduates were more likely to report that their parents became involved in the process of choosing a mathematics course. Although one might expect teachers and counselors to step in when parents are unable to guide their children due to their own lack of experience, that did not seem to be the case.

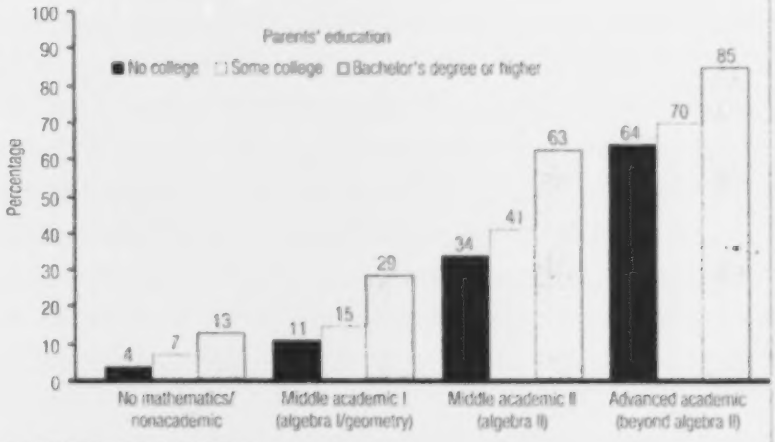
Finally, parents with college degrees tend to know more about college prices. A recent study showed that sixth and twelfth grade students and their parents all tended to overestimate the price of attending college, but that the ability to estimate accurately increased with parents' education (U.S. Department of Education 2001b). Media attention to rising college prices fosters the perception that college is unaffordable and may discourage students from preparing both academically and financially.

Appropriate Curricular Choices

The rigor of students' high school curriculum affects their likelihood of going to college. Many four-year colleges and uni-

Figure 5

Percentage of 1992 High School Graduates Who Enrolled in a Four-year College by 1994, by Mathematics Curriculum and Parents' Education



SOURCE: Horn and Nunez (2000), Figure 7. Based on NELS data.

BEST COPY AVAILABLE

versities require (or at least strongly recommend) advanced mathematics courses for admission, and students who take a rigorous high school mathematics curriculum are much more likely to enroll in college than those who do not *(see Figure 5)*. The effects are particularly strong for students whose parents did not go beyond high school. In this group, those who completed any advanced mathematics courses in high school (that is, any courses beyond algebra II), were almost twice as likely to enroll in a four-year college as those who stopped at algebra II (64 percent compared with 34 percent). That is, students without college-educated parents can at least partly mitigate their disadvantage by enrolling in a rigorous high school program; however, to do so requires early academic preparation that these students may not have had the opportunity to experience.

Preparation for advanced mathematics in high school starts at least by eighth grade, if not earlier. Overall, 22 percent of 1992 high school graduates took high school–level algebra in eighth grade (Horn and Nuñez 2000). This greatly increased their likelihood of taking advanced mathematics in high school–78 percent of students who had taken algebra in eighth grade enrolled in advanced-level mathematics in high school, compared with 39 percent of students overall.

Even considering only those who scored at the highest level of math proficiency in eighth grade, exposure to algebra before high school made a difference. In this group of relatively high-ability students, 93 percent of those who had taken algebra in eighth grade took advanced-level mathematics in high school, compared with 78 percent of the group as a whole. These clear differences show that encouraging students to take high school–level algebra in eighth grade boosts students' chances of taking advanced mathematics in high school. That, in turn, increases their likelihood of going to college. Unfortunately, a substantial proportion of students whose parents did not attend college attend middle or junior high schools that do not offer algebra. One out of five high-ability eighth graders whose parents had not gone beyond high school reported that their school did not offer algebra. Only one out of 10 high-ability eighth graders whose parents were college graduates attended a school that did not offer algebra.

Support from Parents, Peers, and School Personnel

Parents, peers, and school personnel can help at-risk students overcome a variety of obstacles to college access and persistence. A study of 1992 high school graduates at moderate to high risk[1] of not completing high school suggests that these three groups strongly influence whether at-risk students go to college (Horn and Chen 1998). Defying the odds, 27 percent of the high school graduates who had been at moderate risk of dropping out of school and 14 percent of those who had been at high risk not only completed high school on time but also enrolled in a four-year college within the next two years. Studying how those who enrolled in college differed from those who did not enroll points to factors that promote access, at least for at-risk students.

The study computed students' relative odds of enrolling in a four-year college based on certain characteristics. Using this particular statistical technique, it was possible to measure the separate effects of parental, school, and peer involvement while holding student characteristics such

MATH COUNTS—Taking challenging mathematics courses can mitigate the effect of parents' education on college enrollment. The association between taking a rigorous high school math curriculum and going to college is strong for all students, but especially so for those whose parents did not go beyond high school.

POSITIVE PEER PRESSURE—More at-risk students apply to college if their friends plan to go. College outreach programs, as well as parental and school support with the application process, also have proven worthwhile.

[1] "Moderate to high risk" was defined as having two or more of the following risk factors: being in the lowest socioeconomic quartile, coming from a single-parent family, having an older sibling who dropped out of high school, earning average grades of C or lower from sixth to eighth grade, repeating a grade between first and eighth grades. About one quarter of all high school graduates had two or more of these risk factors.

BEST COPY AVAILABLE

as their risk factors and achievement constant. The analysis showed that students at moderate or high risk levels whose parents reported frequently discussing school-related matters with their teen were about twice as likely to enroll in a four-year college as similar students who did not participate in such discussions. The study revealed that students' decisions to enroll in college often are consistent with the college plans of peers. When most or all of their high school friends planned to enroll in a four-year college, these students were about four times as likely to enroll in college as those students who had no friends planning to attend college. Assistance from teachers and other school staff also contributed to students' success. Students who received help filling out college applications or preparing for entrance exams were more likely to enroll than those who did not. Finally, students who participated in high school outreach programs almost doubled their odds of enrolling in a four-year college. However, only 5 percent of at-risk students participated in such programs.

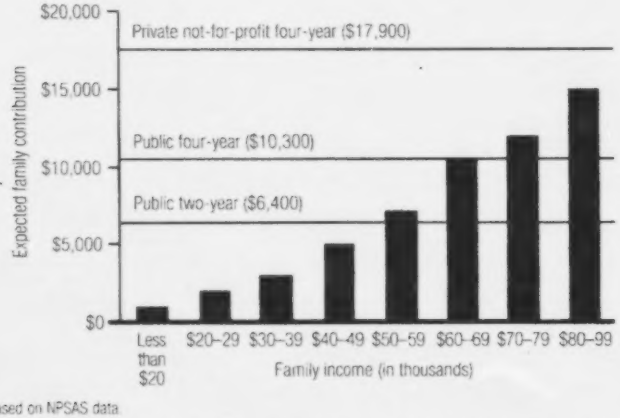
Adequate Financial Resources

Finding a way to pay for college (including applying for financial aid, if necessary) is an essential step toward enrollment. For students from high-income families (earning at least $75,000 per year), this is generally not a problem. Only 16 percent of the parents of college-qualified 1992 high school graduates from high-income families reported that they were very concerned about college prices and financial aid (Berkner and Chavez 1997). The adequacy of financial resources for high-income families is reflected in the high access rate of their children: Of the college-qualified* 1992 high school graduates who took all the other steps necessary to enroll (namely, taking entrance exams and applying to at least one college), 92 percent enrolled in a four-year college within two years of finishing high school.

For low-income (less than $25,000 per year) and middle-income ($25,000 to $74,999 per year) families, finances were a concern: Respectively, 79 percent and 53 percent of the parents of college-

Figure 6

Average EFC Compared to Average Full-time, Full-year Budget for Financially Dependent Students: 1995–96



SOURCE: Choy (2000), Figure 3. Based on NPSAS data.

* Students were considered college qualified if they ranked in the top 75 percent of high school graduates who went to a four-year college on at least one of five criteria. The minimum values that would qualify a student were a GPA of 2.7, a class rank percentile of 54, a combined SAT of 820, a composite ACT of 19, or being in the 56th percentile on the 12th grade aptitude tests administered as part of the NELS study. See Berkner and Chavez (1997) for more details.

BEST COPY AVAILABLE

qualified 1992 high school graduates in these income groups reported that they were very concerned about college prices and financial aid. There is no way to measure to what extent this concern discouraged their children from aspiring to college or taking the necessary steps toward enrollment.

Most low- and middle-income students would have been eligible for financial aid. The formula for determining financial aid eligibility calculates an expected family contribution (EFC) based on financial circumstances (primarily income and assets). The resulting EFC provides a rough measure of what a family can afford to pay for college. *Figure 6* shows the average EFC at various income levels and the average student budgets at public and private four-year institutions. The data in Figure 6 indicate families must make an annual income of about $70,000 to afford a public four-year college or university without financial aid and at least $100,000 to afford a private one (once again without financial aid).

The size of the gaps between the EFC and the price of college reduces the possibility that low- and middle-income students could attend without financial aid. Indeed, a study of students of all ages at four-year institutions (not just the cohort of 1992 high school graduates) showed that almost 90 percent[9] of those at the lowest income levels (that is, those whose family income was below 125 percent of the federally established poverty level for their family size) received financial aid in 1995–96 (Choy 2000b). On average, their aid covered about two-thirds of their budget, regardless of whether they went to a public or private college.

An important question, however, is whether enough financial aid is available to increase the likelihood that low-income students will go to college. This question is difficult to answer for a number of reasons, one of the most important being that almost all low-income high school graduates are eligible for aid, so there is no comparison group of similar unaided students to study. Nevertheless, McPherson and Schapiro (1991), using models that controlled for multiple factors simultaneously, concluded that financial aid does significantly increase the propensity of lower-income students (but not middle- or upper-income students) to enroll.

Evaluating whether the amount of financial aid currently available for low-income students is adequate is beyond the scope of this report. However, the NELS data suggest that financial aid does make college possible for most low-income students who are otherwise prepared. Although low-income 1992 high school graduates were much less likely than their middle-income peers to enroll in a four-year college overall (33 percent versus 47 percent), low-income graduates who prepared academically and took the other necessary steps toward admission were just as likely as middle-income graduates to enroll (83 percent for both groups), suggesting that financial aid was at least enough to permit initial enrollment (Berkner and Chavez 1997).

FINANCIAL AID IS KEY— The price of attending college is still a significant obstacle for students from low- and middle-income families, but financial aid is an equalizer, to some degree. Low-income students enroll at the same rate as middle-income students if they take all the necessary steps toward enrollment.

[9] Specifically, 87 percent at public institutions and 90 percent at private ones.

BEST COPY AVAILABLE

Staying in School Once Enrolled

Efforts to equalize opportunity for disadvantaged students cannot stop with enrollment. To capture the full benefits of attending college, students must stay in school and earn a degree. Looking only at institutional data, it is difficult to track students' success because they do not always follow a straight path to a degree. A significant number of students transfer to other institutions for any number of personal, financial, or education-related reasons. Longitudinal studies enable researchers to trace students' movement through postsecondary education beyond the first institution they attend. This view provides a better understanding of the factors that contribute to persistence (which is defined as earning a degree or remaining enrolled). Of the two NCES studies of beginning postsecondary students, the first (starting in 1989-90) is the most useful for studying the persistence of bachelor's degree seekers because it covers a five-year period. The more recent study (starting in 1995-96) covers only three years so far.

Institutional Retention Versus Student Persistence

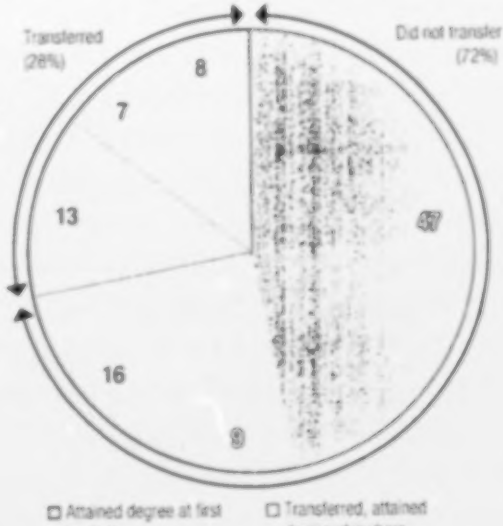
One of the most important findings from the longitudinal studies is that institutional retention rates greatly understate postsecondary persistence. *Figure 7* describes the 1994 status of students who started their postsecondary education at a four-year institution in 1989-90. Of this group, 47 percent had earned a degree at their first institution and 9 percent were still enrolled, which brings the institutional retention rate after five years to 56 percent. Therefore, 44 percent left the first institution they attended, some dropping out entirely and others transferring elsewhere, presumably to find a more appropriate program or better institutional match. Factoring in those who transferred and earned a degree elsewhere (13 percent) or were still enrolled at another institution (another 7 percent) brings the total postsecondary persistence rate after five years to 76 percent–considerably higher than the institutional retention rate.

OVERALL, GOOD NEWS— Even if students leave the first college in which they enrolled, they do not necessarily drop out of the postsecondary system; they often transfer to another school. Therefore, the dropout and completion records of individual institutions understate overall postsecondary persistence.

Figure 7

1994 Status of 1989–90 Beginning Postsecondary Students Who Started at Four-year Institutions

NOTE: 7 percent of those who attained a degree earned an associate degree or certificate.



SOURCE: Berkner, Cuccaro-Alamin, and McCormick (1998), Table 4. Based on BPS:90/94 data.

BEST COPY AVAILABLE

HIT THE BOOKS—Students can increase their likelihood of succeeding in college by enrolling in a rigorous high school program and limiting the number of hours they work while in college.

Students' Choices and Experiences that Influence Persistence

Students can influence their likelihood of college success beginning in high school. All students can be encouraged to adopt behaviors associated with higher persistence, such as enrolling in a rigorous high school program and studying hard. They can also be encouraged to limit the number of hours worked while attending college. Other behaviors, such as enrolling immediately after high school, attending college full time, and starting at a four-year institution may not be practical or advisable for students who do not know whether they belong in a four-year college or for students who cannot afford such options. However, awareness of these connections can lead to better support for students.

High School Curriculum

Earlier, this report described the strong link between high school mathematics courses and gaining access to college. The 1995–96 BPS data show that high school curriculum also contributes to persistence. Three years after entering a four-year institution, 87 percent of those who had taken a rigorous curriculum in high school were still on track to a bachelor's degree (that is, they remained at their original institution or they had transferred to another four-year college without a break), compared with 62 percent of those who had taken no more than a basic high school curriculum (Warburton, Bugarin, and Nuñez 2001).[10]

These findings are consistent with those from an earlier longitudinal study that followed a cohort of 1980 high school sophomores for 11 years after graduation. Adelman (1998) found that the two most important variables contributing to bachelor's degree attainment were the student's "academic resources" (a composite measure depending mainly on the intensity and quality of the student's curriculum, and also on performance) and continuous enrollment.

Starting at a Community College

Starting at a community college is an important cost-saving option for bachelor's degree seekers. Tuition and fees tend to be less expensive than at four-year colleges, and students often can maintain their current jobs and/or live with their parents while attending. As a result, the community college is a good testing ground for students who are unsure about their goals or academic abilities. In fact, 23 percent of bachelor's degree seekers who began their postsecondary education in 1989–90 started at a two-year institution (Berkner, Cuccaro-Alamin, and McCormick 1996).

However, this strategy may not lead them to a degree. While more than half (57 percent) of the students who started at four-year institutions (in 1989–90) and sought bachelor's degrees had reached that goal by 1994, only 8 percent of those who started at two-year institutions in the same year had earned a bachelor's degree by 1994. Among those who intended to earn a bachelor's degree, only 39 percent actually transferred (McCormick 1997). Starting at a two-year institution rather than a four-year institution with the intention of earning a bachelor's degree also was associated with a greater likelihood of leaving postsecondary education without having earned a degree (46 percent versus 23 percent) (U.S. Department of Education 1997).

*The basic high school curriculum includes four years of English and three years each of mathematics, science, and social science. The most rigorous curriculum includes, in addition to the basic curriculum, advanced science courses (biology, chemistry, and physics), four years of mathematics through at least precalculus, three years of a foreign language, and at least one honors course or Advanced Placement test.

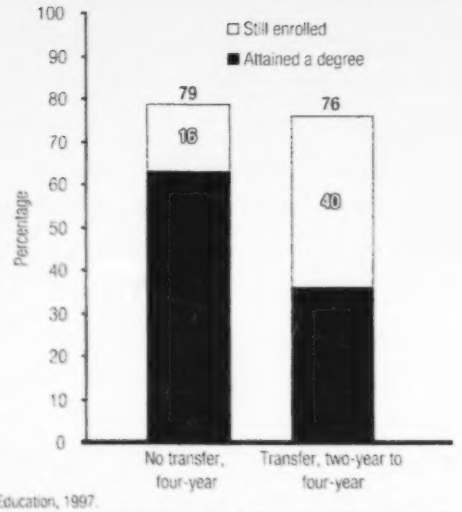
BEST COPY AVAILABLE

When bachelor's degree seekers who started at a two-year institution did transfer to a four-year institution, however, their rate of persistence was just as high as the rate for those who started at a four-year institution, but they took more time to finish. After five years, 36 percent had earned a bachelor's degree and another 40 percent were still enrolled, bringing their total persistence rate to 76 percent *(see Figure 8)*. This is about the same as the overall persistence rate of those who started at a four-year institution and did not transfer, but more students who started and stayed at a four-year institution (63 percent) had earned their degree within five years.

Figure 8

Percentage of 1989–90 Beginning Postsecondary Students Who Attained a Degree or Were Still Enrolled in Spring 1994

Note: Data refer only to students who initially enrolled with the goal of earning a bachelor's degree.



SOURCE: U.S. Department of Education, 1997.

Nontraditional Status

The characteristics that describe nontraditional college students (shown in Figure 2 on page 10) also were associated with lower persistence and attainment rates among bachelor's degree seekers who started their postsecondary education in 1989–90 at any type of institution *(see Figure 9, next page)*. For the purposes of this paper, these nontraditional students are labeled, based on the number of characteristics they have, as minimally nontraditional (one characteristic), moderately nontraditional (two or three characteristics), or highly nontraditional (four or more characteristics). Even minimally nontraditional students do not perform as well as traditional students *(see Table 3, page 23)*. Only 31 percent of nontraditional students who began their postsecondary education in 1989–90 seeking a bachelor's degree had earned one by 1994 (compared with 54 percent of traditional students). The attainment rate was extremely low for highly nontraditional students (11 percent). Nontraditional students would be expected to take more time to complete a degree because they are more likely to attend part time. However, even after five years, nontraditional students were no more likely than traditional students to still be enrolled, and they were much more likely to have left school without a degree or changed their objective from a bachelor's degree to an associate degree or certificate.

The nontraditional students seeking bachelor's degrees were most at risk in their first year: Of these students, 27 percent left the persistence track–that is, left without returning, transferred downward to a less-than-four-year institution, or remained out of college for more than four months *(see Figure 10, page 23)*. The annual attrition rate continued to be higher for nontraditional than traditional students until the fourth year, but the gap narrowed over time. This suggests that colleges' programs designed to keep nontraditional students in school might be most effective if they are directed toward first-year students.

RISKY BUSINESS—
Risk factors that make it more difficult for students to complete college include working full time, starting at a community college, and having parents who did not attend college.

BEST COPY AVAILABLE

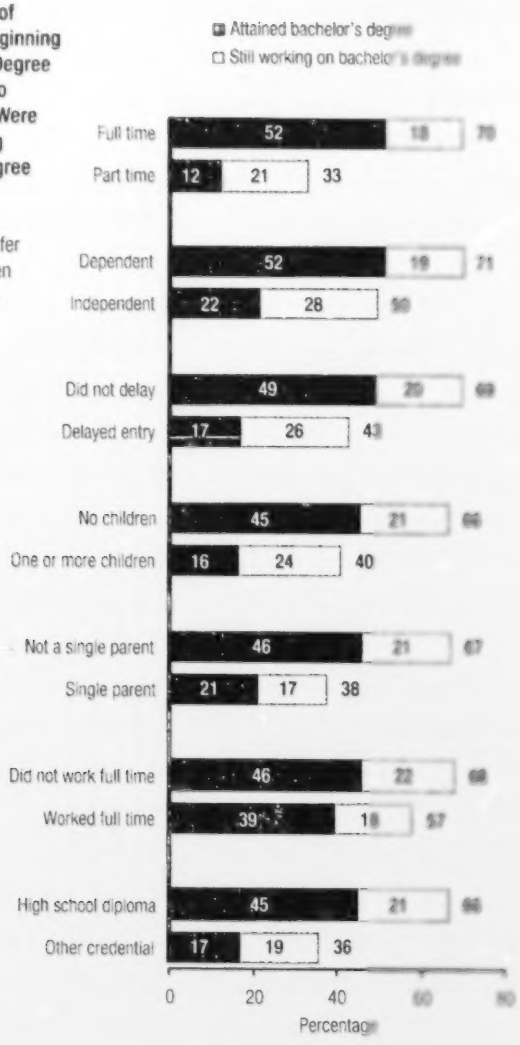
Work, Borrowing, and Attendance

When college funds provided by family, friends, savings, and grants are not enough to meet expenses, students typically work, borrow, or do both. They also may attend part time rather than full time. Students enjoy some latitude in their choice of a financing strategy, but they face constraints as well. For example, some institutions do not permit part-time enrollment; jobs may not be available; and loan programs impose borrowing limits. Students' choices reflect these constraints as well as other personal circumstances, such as willingness to borrow, desire to be primarily an employee while enrolled, and family responsibilities.

Figure 9

Percentage of 1989–90 Beginning Bachelor's Degree Seekers Who Attained or Were Still Working on Their Degree in 1994

Note: Data refer to status when first enrolled.



SOURCE: Berkner, Cuccaro-Alamin, and McCormick (1996), Table 6.3. Based on BPS:90/94 data

A look at the financing strategies of the 1989–90 beginning postsecondary students showed that their choices may indeed have affected their likelihood of persisting toward a degree (Cuccaro-Alamin and Choy 1998). Analysts measured the independent effects of work, borrowing, and attendance on persistence, controlling for other variables (including grades) likely to affect persistence. Both attending part time and working more than 15 hours per week reduced the likelihood of persisting, while working one to 15 hours per week increased the likelihood of persisting. Researchers also found that borrowing increased students' likelihood of persisting, perhaps by reducing their need to work and allowing them to attend full time at higher rates. This would give them more time to devote to their studies.

Parents' Education

Evidence presented earlier in this report showed that not having a parent who earned a bachelor's degree was a disadvantage for access. This disadvantage continues among those who enroll. First-generation college students—those whose parents received no education beyond high school—are about twice as likely as those with a college-educated parent to leave before their second year (23 percent versus 10 percent) (Horn 1998).

First-generation students continue to lag behind the curve after the first year. After three years, they are less likely to still be on track to a bachelor's degree, and after five years they are less likely to have earned one. However, rigorous preparation in high

BEST COPY AVAILABLE

Table 3

Distribution of 1989–90 Beginning Postsecondary Students Seeking a Bachelor's Degree, According to Their Persistence and Attainment by 1994

	Attained bachelor's degree	Enrolled on bachelor's degree track in 1994	Not enrolled in 1994	Changed degree objective*
Total Percentage	45	21	25	10
Traditional students	54	20	19	7
Nontraditional students**	31	23	33	13
Minimally nontraditional	42	23	27	9
Moderately nontraditional	17	25	41	17
Highly nontraditional	11	22	42	25

*Student switched to a degree program other than a bachelor's degree before 1994. The student may or may not have been enrolled in 1994.

**Nontraditional status refers to the presence of one or more nontraditional characteristics (see Figure 2, page 10): minimal = 1; moderate = 2 or 3; high = 4 or more.

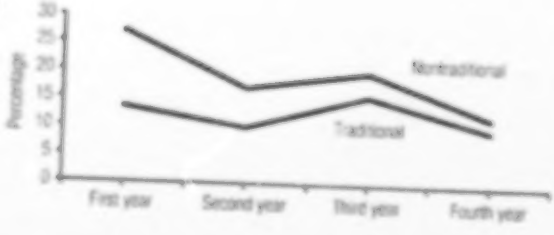
SOURCE: Horn (1998), Table 13. Based on BPS:90/94 data.

school substantially narrows the gap in postsecondary outcomes between first-generation students and their peers whose parents graduated from college *(see Figure 11)*. It does not, however, eliminate it. After controlling for other variables, both parents' education and high school curriculum continue to affect whether a student stayed on track (Warburton, Bugarin, and Nuñez 2001).

It's good news that a solid majority—about three-quarters—of all students starting at a four-year college have earned a bachelor's degree or still are enrolled five years later. However, the persistence rate should not give college and university administrators a reason to relax. Many factors can discourage a student from continuing their education—work status, parents' education, institution type, and students' backgrounds and life choices. Any of these factors can obstruct the path toward a degree.

Figure 10

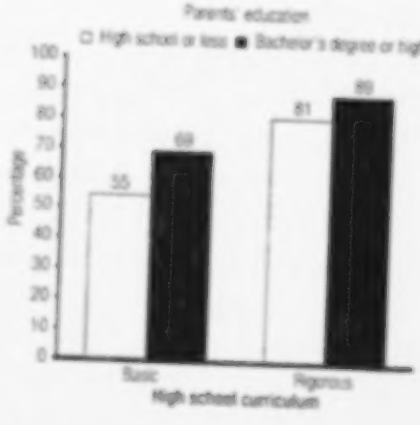
Annual Attrition Rates of 1989–90 Beginning Postsecondary Bachelor's Degree Seekers



SOURCE: Horn (1998), Table 14. Based on BPS:90/94 data.

Figure 11

Percentage of 1995–96 Beginning Students at Four-year Colleges Who Were Still on Track to a Bachelor's Degree After Three Years, by High School Curriculum and Parents' Education



SOURCE: Warburton, Bugarin, and Nuñez (2001), Table 15. Based on BPS:96/98 data.

BEST COPY AVAILABLE

The Importance of the First Year

Completion of the first year of college is an important benchmark for students. About 16 percent of first-year students at four-year colleges and universities in 1989–90 dropped out during their first year or failed to return for a second year (Horn 1998). The students who left had characteristics or displayed behaviors that distinguished them from students who stayed in college. Students who left were more likely to have parents without bachelor's degrees. They also were more likely to have delayed enrolling in college after high school, earned low grades in their first year of college (a GPA under 2.0), worked 35 hours or more per week while enrolled, and participated in co-curricular activities at a low or moderate level.[1]

For the majority of students who left, the decision to drop out was temporary. *Figure 12 (see next page)* traces the various paths through postsecondary education that these students took. During the next six years, 64 percent returned—some to their original institution, but more to a different one. The majority of those who returned to a different institution transferred downward to a less-than-four-year institution.

As one would expect, students who stayed at their first institution were much more likely than those who stopped out to have earned a bachelor's degree by 1994. An interesting note, though, is that if attainment is defined as earning some postsecondary credential (not necessarily a bachelor's degree), those who returned to their first institution and those who transferred showed similar attainment rates, with about one-third attaining some credential.

Those who did not return within six years were more likely to be nontraditional students—older, married, parents, and working full time while enrolled. Those who returned were more likely to have attended full time and were more academically integrated (had more contact with faculty and other students).

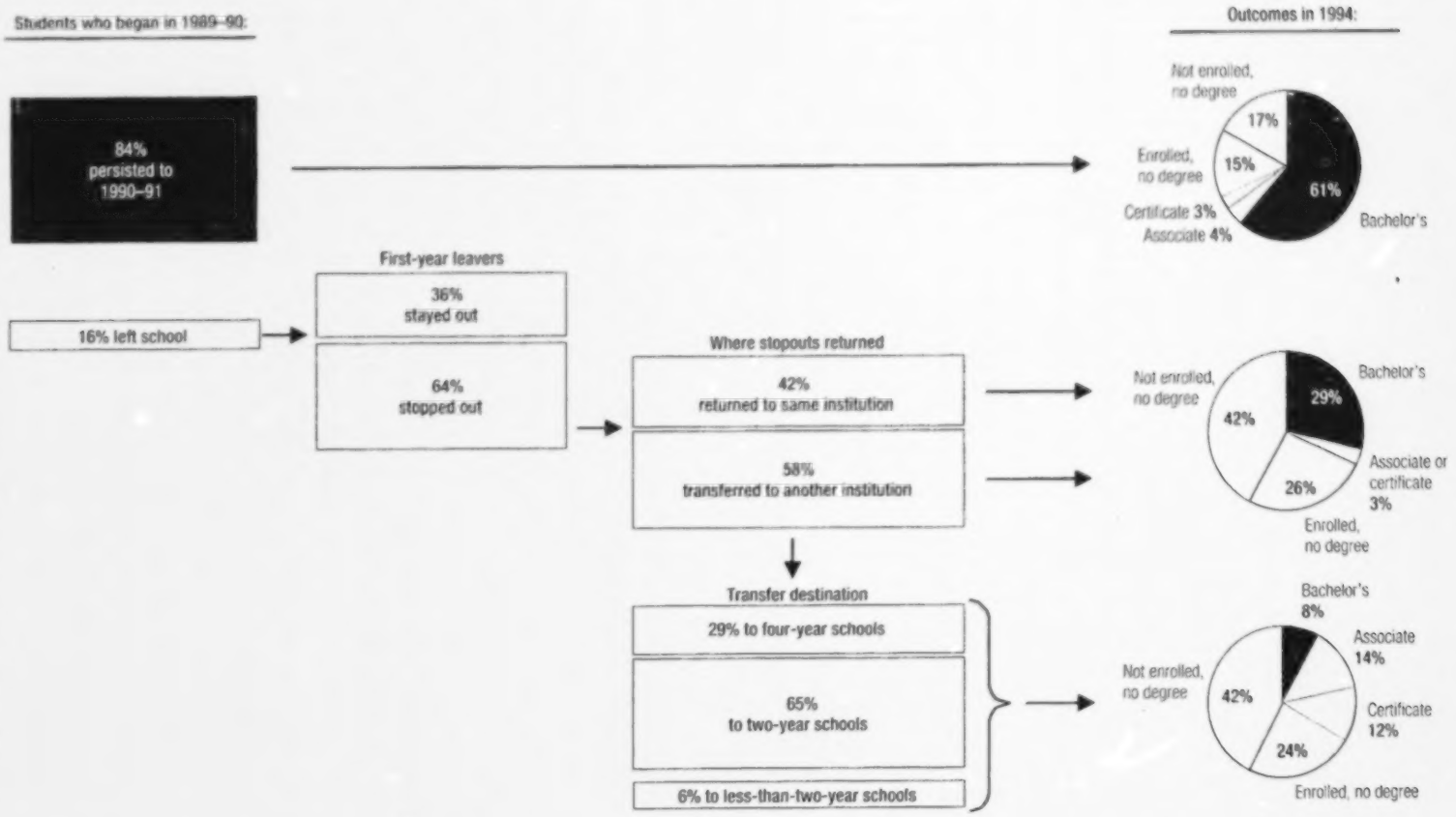
TEMPORARY LEAVE— Most students who leave college during or after their first year return sometime during the next six years. More often, though, they enroll in a different institution, rather than returning to their first one.

[1] Such participation is based on how frequently students discussed academic matters with faculty, met with an advisor concerning academic plans, participated in study groups with other students, and attended career-related lectures. See Horn (1998) for more details.

BEST COPY AVAILABLE

Figure 12

Stopout Path for 1989–90 Beginning Students in Four-year Institutions and Outcomes in 1994



SOURCE: Horn (1998), Figure 1. Based on BPS: 90/94 data.

BEST COPY AVAILABLE

Time to Degree

The longer it takes students to earn a bachelor's degree, the more costly their education becomes–not only for themselves, but for their institutions and the public as well. Tuition and fees, living expenses, and student loans mount, as do the public and private subsidies that cover the difference between what students pay and the full cost of their education.

The traditional pattern of entering college immediately after high school and earning a bachelor's degree four years later is no longer the experience of most graduates. Of those who earned bachelor's degrees in 1992-93, only 36 percent had completed college within four years of first enrolling in postsecondary education (McCormick and Horn 1996). Another 28 percent finished in five years, bringing the total who completed college within five years to 64 percent. One reason that students took more than four years to finish is that a significant proportion (37 percent) attended more than one institution, and of those who did, about half (48 percent) took a break of at least four months between institutions. When graduates stayed at their first institution, completion rates were considerably higher–51 percent within four years, and 80 percent within five years.

Certain other characteristics can influence the amount of time it takes for students to complete their degrees.[17] As *Figure 13* shows (see next page), students took a longer time to finish college when they waited until they were 20 or older to start their postsecondary education, when they began at a two-year institution, or when they attended a public (rather than private) four-year college. Older students and students at public four-year colleges are more likely to attend part time (Horn and Berktold 1998), and students at private colleges typically face higher sticker prices (Berkner 1998), which increases the financial pressure to finish as quickly as possible. Students also took a longer time to finish college when they entered less prepared for college work (as measured by their SAT/ACT scores) and when they struggled academically in college (as measured by their cumulative GPA).

HOW LONG—Sixty-four percent of students who earned their bachelor's degree in 1992–93 had finished within five years, meaning that just over one-third had taken more than five years to earn their degree.

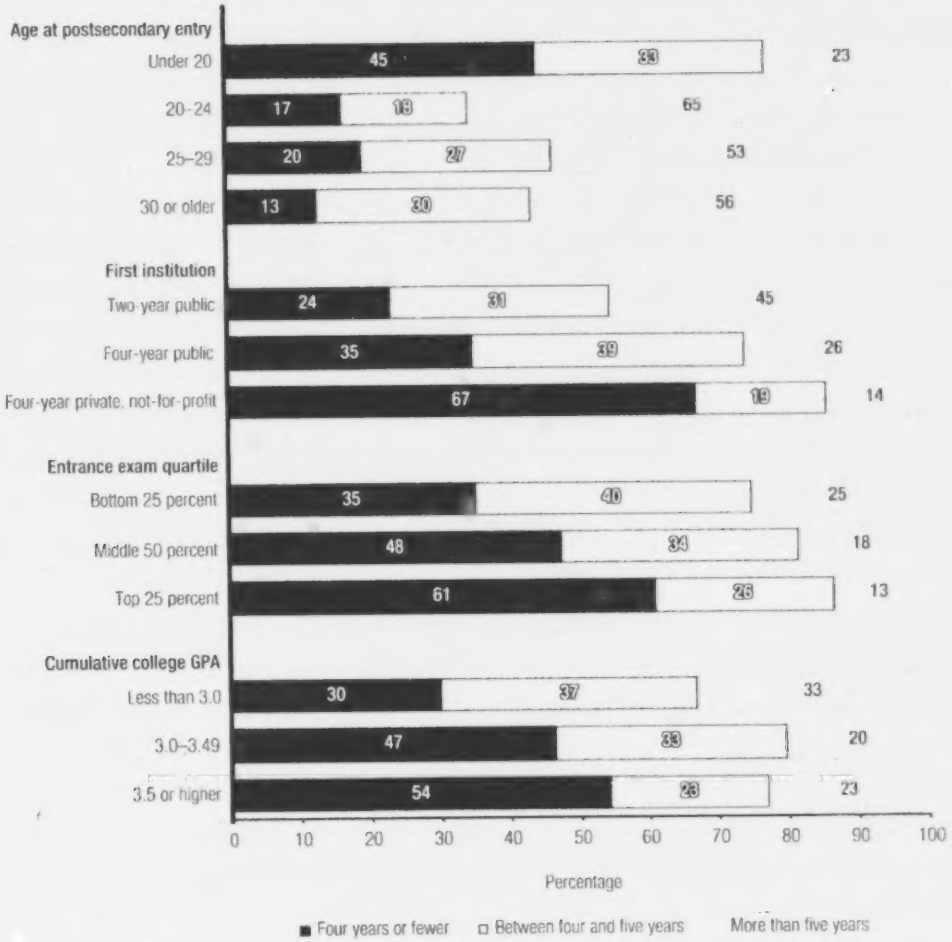
[17] To focus more clearly on differences that are unrelated to breaks between attendance at different institutions, students who stayed out of college for more than six months were excluded from this analysis.

BEST COPY AVAILABLE

Figure 13

Time-to-Degree* for 1992–93 Graduates

* For more meaningful comparisons, this figure excludes students who transferred and took an extended break of more than six months between institutions.



SOURCE: McCormick and Horn 1996, Tables 12 and 18. Based on B&B:93/94 data

BEST COPY AVAILABLE

Life After College

Students enroll in college for many reasons, but most expect that earning a degree will improve their employability and their salary, both immediately and in the longer term. The bachelor's degree also is a stepping stone to an advanced degree. Because graduates invest a substantial amount of time and money in earning a bachelor's degree, it is important to learn about their enrollment and employment experiences after they graduate. It also is important to learn whether those who borrowed are having difficulty repaying their loans or face other burdens associated with their debt.

Interviews with 1992–93 college graduates four years later found 89 percent of them employed and some of them combining school and work *(see Figure 14)*. Of those without jobs, about half were students who were not working, and the other half were neither working nor enrolled. The unemployment rate (calculated by considering only those looking for work) was a relatively low 2.9 percent at a time when the national unemployment rate for adults aged 25 and older was 3.7 percent (McCormick et al. 1999).

Graduate Enrollment

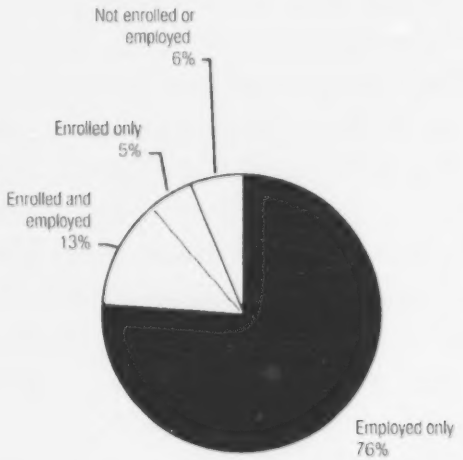
Asked about their educational plans when they were seniors, 85 percent of graduates who had earned bachelor's degrees in 1992–93 reported that they expected to earn an advanced degree at some time in the future *(see Figure 15, next page)*. The overall percentage expecting to earn an advanced degree declined as time passed after they finished college, especially for those who said they wanted to pursue a doctoral degree. The percentage expecting to earn a doctoral degree had dropped by about half by 1997 (from 21 to 12 percent), while the percentage expecting to earn a master's degree declined only slightly (from 58 to 54 percent) (McCormick et al. 1999). The percentage expecting to earn a professional degree stayed the same (6 percent).

By 1997, 41 percent of 1992–93 bachelor's degree recipients had applied for admission to graduate school, 35 percent had been accepted, 30 percent had enrolled, and 12 percent already had completed a graduate degree (see Figure 15, next page). There were no differences in the rate at which men and women applied for admis-

STAYING IN THE SYSTEM— About one-third of those who earn a bachelor's degree enroll in a graduate program within four years. Men and women enroll at the same rates but tend to select different programs. Women are less likely than men to choose MBA, professional, and doctoral programs, and are more likely to choose master's programs other than an MBA.

Figure 14

Employment and Enrollment Status of 1992–93 Bachelor's Degree Recipients in 1997



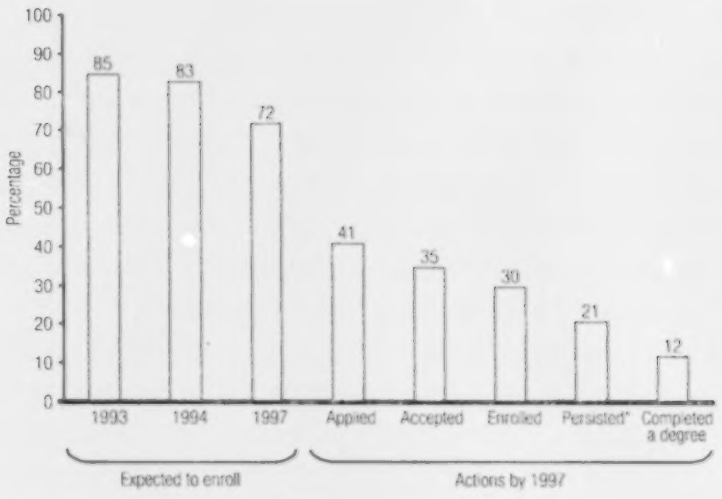
SOURCE: McCormick et al. (1999), Figure A. Based on B&B 93/97data

BEST COPY AVAILABLE

Figure 15

Percentage of 1992–93 Bachelor's Degree Recipients with Various Graduate Enrollment Expectations and Outcomes by 1997

*Persisted means attained a degree or still enrolled.



SOURCE: McCormick et al. (1999), Tables 1, 5, and 15. Based on B&B:93/97 data.

sion to advanced degree programs, were accepted, or enrolled (McCormick et al. 1999). Men and women did tend to favor different degree programs, though. Men were more likely than women to enroll in MBA, doctoral, and professional[13] programs, and women were more likely than men to enroll in non-MBA master's degree programs (especially in education)*(see Figure 16, next page)*.

In April 1994, about one year after they graduated, bachelor's degree holders who had maintained a GPA of 3.0 or higher, majored in mathematics or science, and completed their degree by age 24 were more likely to have pursued further educational opportunities than their fellow graduates who had earned lower grades, majored in other fields, or were older (Choy and Geis 1997). After controlling for these factors, researchers found that graduates who did not borrow to pay for their undergraduate education were slightly more likely to be enrolled than were those who borrowed. In other words, borrowing seems to have a slightly discouraging effect on immediate further enrollment. By 1997, however, the effect of undergraduate borrowing disappeared. Analysts concluded that, after controlling the factors mentioned above that affect enrollment, those graduates with debt and those without were about equally likely to have enrolled in further education (Choy 2000a).

Parents' education continues to have an effect at the graduate level. First-generation students were less likely than those with a parent who had earned at least a bachelor's degree to enroll in a graduate degree program (34 percent versus 25 percent). This relationship held even after researchers controlled for grades, age, major, and other variables that affect enrollment (Choy 2000a).

When interviewed in 1997, 21 percent of the 1992–93 bachelor's degree recipients had attained an advanced degree or were still enrolled (see Figure 15). Another 9 percent had enrolled by 1997 but left without completing a degree.

CLOSING THE GAP— Although students whose parents did not go to college are at a disadvantage with respect to college access and persistence, if they do finish a bachelor's degree, their employment outcomes are similar to those of their peers with college-educated parents.

[13] "Professional" includes law, medicine, chiropractic, osteopathic medicine, dentistry, veterinary medicine, optometry, pharmacy, podiatry, and theology.

BEST COPY AVAILABLE

Employment

In April 1997, 89 percent of 1992–93 bachelor's degree recipients were working–81 percent full time and 8 percent part time (McCormick et al. 1999). A few were unemployed (3 percent), and 8 percent were out of the labor force (mostly studying). Compared with men, women were slightly less likely to be working full time (77 percent versus 85 percent) and more likely to be working part time (11 percent versus 6 percent).

Just over half (56 percent) of the bachelor's degree recipients characterized their jobs as closely related to their degrees. Similar percentages reported that their jobs were challenging (58 percent) and carried strong career potential (57 percent). However, only 39 percent were very satisfied with the promotional opportunities associated with their jobs, and even fewer–33 percent–were very satisfied with their pay.

The average salary for a full-time worker who had not attended graduate school was $34,300 in 1997, but compensation varied by major (Horn and Zahn 2001). Computer science majors, earning an average of $44,600, were positioned at one end of the range, and education majors, earning an average of $24,500, were positioned at the other.

First-generation status does not appear to affect occupation or income, at least in the first few years after graduating. That is, if high school graduates whose parents did not attend college overcome the barriers to enrollment and persistence and graduate with a bachelor's degree, they fare as well as their peers whose parents attended college.

Loan Repayment

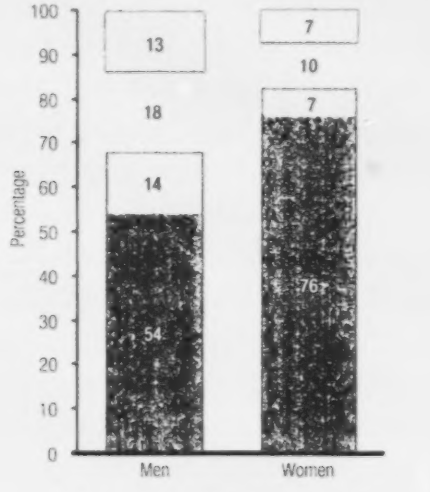
About half of all 1992–93 bachelor's degree recipients borrowed to pay for their undergraduate education (Choy 2000a). In 1997, 39 percent of all graduates still owed money on their loans (for undergraduate and/or graduate education) and 16 percent had repaid them. The remaining 46 percent had not borrowed. Borrowing for undergraduate education did not seem to affect lifestyle choices such as the timing of marriage or major purchases such as a car or a house.

Of students who did not continue their education,[14] and therefore could be in repayment in 1997, 51 percent had borrowed (an average of $10,500). These students fall into two groups: 18 percent already had repaid these loans and 33 percent still owed on these loans. For those who still owed, the average remaining balance was $7,100, and the average monthly payment was about $150. Most borrowers were in good financial shape to repay their loans: The median debt burden (that is, monthly payments divided by monthly income) was 5 percent. Students enrolling later than this cohort have borrowed more on average, and consequently may be experiencing more difficulty repaying their loans.

LOAN REPAYMENT— Just over one-third of all graduates were repaying student loans four years after they finished college. The payments, averaging about $150 per month, were not burdensome for most when compared with their incomes, although these data pre-date recent large increases in borrowing.

Figure 16

Distribution of 1992–93 Bachelor's Degree Recipients in Various Graduate Degree Programs in 1997, by Gender



SOURCE: McCormick et al. (1999), Figure 5. Based on B&B:93/97 data.

[14] Fifty-three percent of all borrowers did not continue their education.

BEST COPY AVAILABLE

Conclusion

In the final analysis, sifting through a decade's worth of data on college students revealed several major characteristics and behaviors that appear to have most greatly influenced students' access to and success in four-year colleges and universities.

Academic Preparation and Performance. A rigorous high school program yields long-lasting benefits. Taking challenging academic courses not only helps students get into college, but it also increases their likelihood of succeeding. While high school students may find it difficult to look so far ahead, they need to know that what they do in high school counts. Opting for an easier schedule might be a tempting way to boost a GPA, but such a strategy is not likely to pay off in the future.

Parents' Education. This report shows that students whose parents did not go to college are less likely to enroll in college or persist toward a bachelor's degree than their peers with college-educated parents, even after researchers controlled for other factors such as income, educational expectations, academic preparation, parental involvement, and peer influence. However, for first-generation college students who do overcome the barriers, earning a bachelor's degree seems to level the playing field–at least with regard to some basic measures of employment outcomes in the first few years after graduation, parental education had no discernible impact. Odds are that efforts to motivate this group of students–before high school, if possible–and to help them complete the required steps for enrolling in college pay off.

Nontraditional Status. Many of today's entering college students come to campus already bearing adult burdens, such as full-time jobs and/or dependents to support. Nontraditional status encompasses both demographic and behavioral aspects which are interdependent. If, for example, a student has children, he or she is more likely to work full time and attend school part time, a pattern less likely to lead to a bachelor's degree. But exhorting such students to quit or cut back on work is not realistic. Similarly, there is no point in urging students who are unsure about college to enroll without delay. Nevertheless, the higher education community needs to understand the obstacles these students face and to support them whenever possible.

BEST COPY AVAILABLE

Financing Strategies. How students balance working, attending college part time, and borrowing can affect their success. A study of the independent effects of these and other factors on persistence found that students need not be discouraged from borrowing reasonable amounts to finance their education: Those who borrow are more likely to persist toward a degree. And studies of debt burden suggest that most students who stay in school and earn a degree do not experience much trouble repaying their student loans. Of course, ensuring that students do not have to borrow excessively requires adequate grant aid when reasonable amounts of borrowing and work do not provide low-income students with enough money to cover their educational expenses.

Developing a keen understanding of what we have learned about these issues from students is the first step higher education leaders can take toward expanding opportunities for all students. Campus leaders might use these studies and data as guideposts for examining the critical characteristics and experiences of their current and prospective students. To spark such studies, this report includes questions for institutional research.

BEST COPY AVAILABLE

Questions for Institutional Research

1) What are the demographic characteristics of students entering our institution?

2) How many nontraditional students do we have? How many students display each of the nontraditional characteristics?

3) How much are students working while enrolled? What effect does work have on their ability to progress through their coursework and complete their degree? In what ways does it help them and in what ways does it hinder them?

4) What proportion of our students are the first in their family to attend college?

5) What is the relationship between high school curriculum and success at our institution (as measured by grades and retention)? Does remediation help?

6) What is the relationship between participation in outreach programs and success at our institution?

7) How do students who started at two-year institutions perform at our institution compared with other students? How many drop out? Do they take longer to finish? If so, how much longer?

8) How do nontraditional students perform at our institution compared with other students? What specific problems do they encounter?

9) What are the reasons students leave? Do these reasons vary according to the timing of their departure? How many students return and when? How many students transfer downward or laterally?

10) How long does it take students to finish? What are the differences among students who finish in four years, five years, or longer?

11) How many students go on to graduate school and in what fields?

12) When students become employed after graduation, what are their starting salaries? How well prepared do they consider themselves?

13) How do our graduates' debt levels compare to their income?

BEST COPY AVAILABLE

KEY STUDIES:
An Annotated Bibliography

Unless otherwise indicated, the reports listed below are published by the U.S. Department of Education, National Center for Education Statistics. PDF versions of the reports can be found by searching for the NCES publication number in the electronic catalog on the NCES web site (http://nces.ed.gov/pubsearch).

Access

Berkner, Lutz K., and Lisa Chavez. *Access to Postsecondary Education for the 1992 High School Graduates* (NCES 98-105). 1997.

This report focuses on the access of low-income and minority students to postsecondary education and the degree to which financial constraints limit the access of students with the academic qualifications to attend a four-year college. It shows differences by income and race/ethnicity in the four-year college enrollment rates of college-qualified graduates. However, the differences between college-qualified low- and middle-income students and among college-qualified African-American, Hispanic, Asian-American, and white students are eliminated among students who take the steps necessary to attend a four-year college (take college entrance examinations and apply for admission).

Horn, Laura, and Anne-Marie Nuñez. *Mapping the Road to College: First-generation Students' Math Track, Planning Strategies, and Context of Support* (NCES 2000-153). 2000.

This report compares first-generation students (those whose parents have no more than a high school education) with their peers whose parents attended college. The study found that even after controlling for measures of academic achievement, family income, family structure, and other related characteristics, first-generation students are less likely than their peers to participate in academic programs leading to college. However, regardless of parents' education, students who complete advanced mathematics programs and whose parents and schools support them through the application process have greatly increased chances of enrolling in a four-year college.

Horn, Laura, and Xianglei Chen. *Toward Resiliency: At-risk Students Who Make It to College*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1998.

This study compared at-risk students who enrolled in college with at-risk students who did not, with the goal of identifying the factors that make a difference. It found that parent and peer engagement indicators are important, as are having friends who plan to attend college and participating in college preparation activities and outreach programs.

BEST COPY AVAILABLE

Staying in School Once Enrolled

Warburton, Edward C., Rosio Bugarin, and Anne-Marie Nuñez. *Bridging the Gap: Academic Preparation and Postsecondary Success of First-generation Students* (NCES 2001-153). 2001.

This report examines the extent to which the academic preparation of first-generation students in high school affects their persistence and attainment at the postsecondary level. It showed that while first-generation status is negatively associated with academic preparation in high school and persistence in college, taking rigorous coursework in high school substantially narrows the gap in postsecondary outcomes between first-generation students and their peers whose parents graduated from college.

Horn, Laura. *Stopouts or Stayouts? Undergraduates Who Leave College in Their First Year* (NCES 1999-087). 1998.

This report examines the educational experiences of the students who leave postsecondary education during or immediately after their first year and tracks the path of those who return (stopouts). It describes the characteristics of the early leavers and, for those who return, where they enroll and what type of credential they earn. Student characteristics associated with early departure are those typically linked to nontraditional status (being older, working full time, attending school part time, and having financial and family obligations that may conflict with attending school).

Life After College

McCormick, Alexander C., Anne-Marie Nuñez, Vishant Shah, and Susan P. Choy. *Life After College: A Descriptive Summary of 1992–93 Bachelor's Degree Recipients in 1997* (NCES 1999-155). 1999.

This report examines the experiences of college graduates four years out. It describes their expectations regarding further education and how those changed over the four years, steps they took to prepare for graduate school, and their progress toward completion if they did enroll. The report also includes a compendium of tables detailing their employment (how much they were working, their occupations, and their salaries) and their experiences with unemployment since graduating.

BEST COPY AVAILABLE

Bibliography

Adelman, Cliff. *Answers in the Toolbox: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1999.

Berkner, Lutz, K. *Student Financing of Undergraduate Education: 1995–96* (NCES 98-076). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1998.

Berkner, Lutz K., and Lisa Chavez. *Access to Postsecondary Education for the 1992 High School Graduates* (NCES 98-105). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1997.

Berkner, Lutz K., Stephanie Cuccaro-Alamin, and Alexander C. McCormick. *Descriptive Summary of 1989–90 Beginning Postsecondary Students: Five Years Later* (NCES 96-155). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1996.

Choy, Susan. *Debt Burden Four Years After College* (NCES 2000-188). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 2000a.

—. *Low-income Students: Who They Are and How They Pay for Their Education* (NCES 2000-169). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 2000b.

Choy, Susan, and Sonya Geis. *Early Labor Force Experiences and Debt Burden* (NCES 97-286). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1997.

Cuccaro-Alamin, Stephanie, and Susan Choy. *Postsecondary Financing Strategies: How Undergraduates Combine Work, Borrowing, and Attendance* (NCES 98-088). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1998.

Horn, Laura. *Nontraditional Undergraduates, Trends in Enrollment from 1986 to 1992 and Persistence and Attainment Among 1989–90 Beginning Postsecondary Students* (NCES 97-578). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1996.

—. *Confronting the Odds: Students at Risk and the Pipeline to Higher Education* (NCES 98-094). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1997.

BEST COPY AVAILABLE

Horn, Laura. *Stopouts or Stayouts? Undergraduates Who Leave College in Their First Year* (NCES 1999-087). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1998.

Horn, Laura, and Jennifer Berktold. *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1995–96, with an Essay on Undergraduates Who Work* (NCES 98-084). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1998.

Horn, Laura, and Xianglei Chen. *Toward Resiliency: At-risk Students Who Make It to College*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1998.

Horn, Laura, and Aziza Khazzoom. *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1989–90* (NCES 93-091). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1993.

Horn, Laura, and Anne-Marie Nuñez. *Mapping the Road to College: First-generation Students' Math Track, Planning Strategies, and Context of Support* (NCES 2000-153). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 2000.

Horn, Laura J., and Mark D. Premo. *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1992–93, with an Essay on Undergraduates at Risk* (NCES 96-237). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1995.

Horn, Laura, and Lisa Zahn. *From Bachelor's Degree to Work: Major Field of Study and Employment Outcomes of 1992–93 Bachelor's Degree Recipients Who Did Not Enroll in Graduate Education by 1997* (NCES 2001-165). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 2001.

Horn, Laura, Katharin Peter, and Kathryn Rooney. *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1999–2000, with an Essay on the Demographic Diversity of Undergraduates at the Turn of the Century* (NCES 2002-XXX). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office. Forthcoming.

Kojaku, Lawrence K., and Anne-Marie Nuñez. *Descriptive Summary of 1995–96 Beginning Postsecondary Students, with Profiles of Students Entering 2- and 4-year Institutions* (NCES 1999-030). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1998.

McCormick, Alexander C. *Transfer Behavior Among Beginning Postsecondary Students: 1989–94* (NCES 97-266). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1997.

McCormick, Alexander C., and Laura J. Horn. *A Descriptive Summary of 1992–93 Bachelor's Degree Recipients 1 Year Later, with an Essay on Time to Degree* (NCES 96-158). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1996.

McCormick, Alexander C., Anne-Marie Nuñez, Vishant Shah, and Susan P. Choy. *Life After College: A Descriptive Summary of 1992–93 Bachelor's Degree Recipients in 1997* (NCES 1999-155). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 1999.

McPherson, Michael S., and Morton Owen Schapiro. *Keeping College Affordable: Government and Educational Opportunity*. Washington, DC: The Brookings Institution, 1991.

U.S. Census Bureau. *Population Projections*. January 13, 2000. Available: http:// www.census.gov [November 29, 2001].

U.S. Department of Education, National Center for Education Statistics. *The Condition of Education 1997* (NCES 97-388). Washington, DC: U.S. Government Printing Office, 1997.

—. *The Condition of Education 2000* (NCES 2000-062). Washington, DC: U.S. Government Printing Office, 2000.

—. *The Condition of Education 2001* (NCES 2001-072). Washington, DC: U.S. Government Printing Office, 2001a.

—. *Digest of Education Statistics 2000* (NCES 2001-034). Washington, DC: U.S. Government Printing Office, 2001b.

Warburton, Edward C., Rosio Bugarin, and Anne-Marie Nuñez. *Bridging the Gap: Academic Preparation and Postsecondary Success of First-generation Students* (NCES 2001-153). Washington, DC: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office, 2001.

Also Available from the ACE Center for Policy Analysis

Distributed Education and Its Challenges: An Overview

This first report in the ACE/EDUCAUSE series *Distributed Education: Challenges, Choices, and a New Environment* identifies significant issues associated with distributed education and suggests a series of questions to help institutional leaders establish and validate their options.

Maintaining the Delicate Balance: Distance Learning, Higher Education Accreditation, and the Politics of Self-Regulation

The second monograph in the ACE/EDUCAUSE series describes the impact of distance learning on the balance among accreditation, institutional self-regulation, and the availability of federal money to colleges and universities.

2000 Status Report on the Pell Grant Program

This report examines historical trends in the Pell Grant program, with particular attention to the 1990s. It also takes a close look at Pell Grant recipients in a single year, detailing their demographic characteristics and financing status, and comparing these students to those who did not qualify for Pell Grants.

Gender Equity in Higher Education: Are Male Students at a Disadvantage?

This monograph presents the latest data on the educational achievement of men and women to determine the validity of previous reports that concluded that women are more likely than their male peers to enroll in college and attain a degree.

Good Practice in Tenure Evaluation

In this report, department chairs and others who contribute to tenure decisions will find practical guidance on how to reach outcomes that are fair and defensible. The report is a joint project of the American Council on Education, the American Association of University Professors, and United Educators Insurance.

Measuring Quality: Choosing Among Surveys and Other Assessments of College Quality

This co-publication of ACE and the Association for Institutional Research provides advice to college presidents and provosts on using national surveys as part of an institutional self-assessment plan. The guide also describes in detail 30 major national surveys and assessments.

BEST COPY AVAILABLE

To Touch the Future: Transforming the Way Teachers Are Taught

To Touch the Future is the 1999 report from the ACE Presidents' Task Force on Teacher Education. The report urges college presidents to make teacher education a central part of their institutional mission, ensure that the education of teachers is of the highest quality, and provide effective support to both beginning and experienced teachers.

All of these publications are available for purchase by calling (301) 632-6757. These publications, plus additional resources, also are available on the ACE web site (http://www.acenet.edu/programs/policy).

BEST COPY AVAILABLE

About the Author

Susan Choy is vice president of MPR Associates, Inc., a research and consulting firm in Berkeley, California.

BEST COPY AVAILABLE

American Council on Education

BEST COPY AVAILABLE

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Access & Persistence: Findings from 10 Years of Longitudinal Research on Students

Author(s):

Corporate Source: ACE

Publication Date: 2002

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1 ↑

☐

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A ↑

☒ After 10/25/02

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B ↑

☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature: Wendy Bressler	Printed Name/Position/Title: Wendy Bressler/ Dir. of Publications
Organization/Address: American Council on Education One Dupont Circle Washington, DC 20036	Telephone: (202) 9399380 FAX:
	E-Mail Address: Date: 08/14/02

(Over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: info@ericfac.piccard.csc.com
WWW: http://ericfacility.org